REMARKS

Applicants respectfully request reconsideration and allowance of the above-identified patent application. Claims 1-28 remain pending, wherein claims 1, 14, 16, and 27 are independent claims and claims 1-3, 6, 7, 9, 10, 14, 16, 19, 20, 23, and 27 have been amended.[1]

Initially, Applicants and Applicants' attorney express appreciation to the Examiner and the Examiner's Supervisor for the courtesies extended during the recent interview held on April 21, 2006. The claim amendments and arguments submitted in this paper are consistent with the amendments and arguments presented during the course of the interview.

In the Office action, claims 16-28 are rejected under 35 U.S.C. § 101 as allegedly directed toward non-statutory subject matter. More specifically, during the interview held, it was alleged that Applicants' disclosure of the computer-readable media is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g., RAM, CD-ROM) and intangible embodiments (e.g, connection to either hardwired, wireless, or a combination of hardwired or wireless, any such connection is properly termed a computer-readable medium). In the interest of expediting prosecution of the current application, Applicants have amended the specification and claims in accordance with suggestions from the Examiner.[2] Accordingly, Applicants respectfully request withdrawal of this ground of rejection.

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[1] Support for the claim amendments can be found throughout the specification; for example, support may be found in the following paragraphs: [0010], [0013], [0014], [0030], and [0032]-[0042].

[2] Nevertheless, Applicants reserve the right to further challenge this ground of rejection by way of presenting corresponding claims that define the computer readable medium in terms consistent with the breadth of that term as provided in Applicants' specification in any related application, as deemed appropriate by Applicants.

Applicants respectfully submit that there are sound policy reasons why a signal, carrier wave or "communication connection" used to provide software to users should be treated no differently for purposes of patent eligibility than a computer disc such a CDROM or floppy disk. On a strictly factual basis it is highly questionable whether a signal, carrier wave or other connection is not tangible. Simply because one cannot see or touch the medium does not change the reality that such a medium nonetheless is real and is used every day to transmit and download software just as effectively as software contained on a CDROM. Thus, to deny patent eligibility for such claims is to ignore the reality that such media is most certainly employed in the using and selling of software carried by such a medium, and thus denies claims to a patent owner that would otherwise provide a basis for asserting direct infringement against competitors, thereby relegating such subject matter to assertions of indirect infringement only, with no sound policy basis for doing so. In other words, to deny such computer program products of patent protection on this basis appears to be exalting form over substance.

Moreover, the asserted reason for treating so-called "signal" claims differently from other kinds of computer readable media (e.g., that wireless signals or connections are not tangible, and cannot tangibly embody a computer program or process since a computer cannot understand/realize (i.e. execute) the computer program or process when embodied or carried on the data signal or connection) is equally as true for other media such as discs or CDROMs. Executable instructions on a disk or CDROM, like those carried by a signal or connection, also cannot be understood or executed until those computer-executable instructions are off-loaded from the disk or

Next, the Office action rejects claims 2 and 3 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. More specifically, with regards to claim 2, the Office action states that the term "wireless device" lacks antecedent basis in the specification to allow a proper determination of the scope intended by Applicants. In support of such allegation, the Office action states that wireless devices can include game controllers, keyboards, mice, and PDAs, which are also recited in claim 2. Although Applicants respectfully disagree that the claim 2 lacks antecedent basis[3] or is otherwise indefinite, in the interest of expediting prosecution this claim has been amended to address the Examiner's concerns.

With regard to claim 3, the Office action alleges that this claim contains trademark/trade names of USB™, Ethernet™, Bluetooth™, and HID™, which does not comply with the requirements of the cited statute above. More specifically, the Office action alleges that the claim scope is uncertain since the trademark or trade name is used to identify a source of goods, and not the goods themselves. Although Applicants respectfully disagree with this analysis, as discussed during the interview it was generally agreed that amending this claim to unambiguously recite the "communication protocol" defined by these specifications would overcome this rejection. Accordingly, in the interest of expediting prosecution, Applicants have amended claim 3 to address the Examiner's concerns. For at least those reasons stated above, Applicants respectfully request withdrawal of the rejection of claims 2 and 3 as allegedly being indefinite.

The Office action then rejects the independent claims under 35 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,654,835 to Foster et al. ("*Foster*") in view of U.S. Patent No. 6,892,250 to Hoskins ("*Hoskins*"). The remaining dependent claims are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Foster* in view of

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CDROM into the computer's RAM. This is no different for a carrier signal or connection, and hence the asserted factual distinction as to tangibility simply lacks merit.

[3] Applicants respectfully note that a rejection under 35 U.S.C. § 112, second paragraph, for being indefinite based on "antecedent basis" refers to lack thereof with regards to the claims themselves, not the specification. Nevertheless, Applicants respectfully note that a more appropriate reasoning for rejecting this claim under the same section of the statute might be under the citing of a broader range/limitation and narrow range/limitation in the same claim. Accordingly, Applicants have responded as if this later reason for the rejection was cited.

Hoskins, and/or further in view of U.S. Patent No. 6,378,035 to Parry et al. ("*Parry*").[4] Applicants respectfully traverse these grounds of rejection.

As discussed during the interview, Applicants' invention generally relates to an efficient mechanism for transferring of data packets between a peripheral device and a host computer using common interfaces and protocols for such communication (e.g., USB). Typically, a client driver uses a protocol stack (e.g., NDIS, Bluetooth, HID, etc.) to request and receive data from a connected device (e.g., USB). In order to facilitate communication, the client submits data requests to the peripheral device through a host controller and the protocol stack; requiring the stack to process different aspects of the request through different modules. The host controller follows its processing schedule by sending at an appropriate time in the stack an information request to the peripheral device. If the device has any information to send, the peripheral responds to the host controller with the requested information, which after some potential processing from the host controller is sent back up through the protocol stack to the client driver. Along the way, various layers in the protocol stack process the information by converting the requested data into something meaningful. In addition, once the data request is made, the protocol layers typically remove the request from the host controller processing schedule.

This request-and-receive operation (sometimes called "ping pong I/O request packets) repeats continually with the host controller. As one can appreciate, such process can be relatively resource-intensive particularly when used for protocols wherein low-latency is important. For example, a client driver for a video game controller might send down two or three request for relatively small amounts of data at a time. In such a case, the amount of resources necessary to schedule and process the two or three short data requests through the protocol stack can approach the time to receive and process each short data packet coming back up through the protocol stack from the video game controller. Consequently, the amount of resource overhead for each short request can result in inconsistent feedback or output delay times between when a user enters input into a peripheral device, and when the host computer system processes the input into some form of appreciable output.

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[4] Although the prior art status of the cited art is not being challenged at this time, Applicants reserve the right to challenge the prior art status of the cited art at any appropriate time, should it arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of the cited art.

In order to reduce the overhead that can otherwise be associated with transferring data packets through such protocol stacks identified above, Applicants advantageously provide for allocating a dedicated buffer region for transferring data packets from a peripheral device to a client driver. In addition to being able to provide processing of the request without sending the requested data through the protocol stack, embodiments also maintain data requests within the protocol stack in order to reduce processing requirements associated with reinserting the data request instructions into the controller schedule.

For example, as recited in independent method claim 1, embodiments provide for (at a client module) initiating a data transfer request that will be sent to a peripheral device, the data transfer request including data request instructions for allocating a buffer that corresponds to the data transfer request. The data transfer request is sent through a protocol stack and the data request instructions are inserted into a schedule at the host controller. Note that the data transfer request is mapped to the allocated buffer in order to allow requested data to be directly transferred from the peripheral device to the buffer. Next, at least a portion of the requested data is received from the peripheral device, which based on the mapping is directed by the host controller to the allocated buffer without processing the requested data through the protocol stack. Upon receiving the at least a portion of the requested data into the allocated buffer, the data request instructions are deactivated in the host controller schedule such that the deactivated data request instructions do not need to be removed from the host controller schedule. In addition, a signal that does not need to be processed by the protocol stack is sent to the client module indicating that the allocated buffer has been filled in order to allow the client module to process the at least a portion of the requested data.

Similarly, claim 14 recites a method for reducing the overhead that can otherwise be associated with transferring data packets through a protocol stack. A data transfer request that will be sent to a peripheral device including data request instructions for allocating a buffer. In addition, this allocated buffer is locked to the data transfer request in such a way that prevents a host controller from allocating the buffer for another purpose until completed processing of requested data for the data transfer request. The data transfer request is then sent through a protocol stack and the request instructions are inserted into a schedule at the host controller, wherein the data transfer request is mapped to the allocated buffer in order to allow the requested

data to be directly transferred from the peripheral device to the buffer. The overhead associated with processing additional data transfer requests is then reduced by: (1) directly sending the requested data to the buffer for processing by the client module; (2) unlocking and recycling the allocated buffer once the requested data has been processed by the client module; (3) maintaining the data request instructions by deactivating them in the host controller schedule until processing of the requested data is complete; and (4) relaying information buffer availability information between the host controller and client device.

As discussed and generally agreed to during the interview, the cited art fails to anticipate or make obvious Applicants' claimed invention for at least the reason that the cited alleged prior art does not disclose, suggest, or enable each and every element of Applicants' claimed invention.[5] For example, the combination of *Foster*, *Hoskins*, and/or *Parry*—taken either individually, or as a whole—does not disclose or suggest that: (1) the data transfer request is mapped to the allocated buffer in order to allow requested data to be directly transferred from the peripheral device to the buffer, without processing the requested data through the protocol stack; (2) upon receiving the at least a portion of the requested data into the allocated buffer, the data request instructions are deactivated in the host controller schedule such that the deactivated data request instructions do not need to be removed from the host controller schedule; and (3) a signal that does not need to be processed by the protocol stack is sent to the client module indicating that the allocated buffer has been filled in order to allow the client module to process the at least a portion of the requested data, as recited, *inter alia*, in claim 1.

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[5] "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131. That is, "for anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly." MPEP § 706.02. Applicants also note that "[i]n determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure.'" MPEP § 2121.01. In other words, a cited reference must be enabled with respect to each claim limitation.

In order to establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143 (emphasis added). In addition, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one or ordinary skill in the art, to modify the references or to combine reference teachings. MPEP § 2143. During examination, the pending claims are given their broadest reasonable interpretation, i.e., they are interpreted as broadly as their terms reasonably allow, consistent with the specification. MPEP §§ 2111 & 2111.01. Finally, Applicants note that M.P.E.P. §2141.02 states that the cited references must be considered as a whole, including those sections that "teach away" from the claimed invention. (Citation omitted).

Foster discloses a high bandwidth data transfer employing a multi-mode, shared line buffer. Although Foster uses such line buffer to interface various external devices (e.g., audio/video decoders) to a base integrated set-top-box system, Foster is silent with regards to a processing requests for data through a protocol stack. As such, Foster does not disclose or suggest that a data transfer request is mapped to the allocated buffer in order to allow requested data to be directly transferred from a peripheral device to the buffer, without processing the requested data through the protocol stack. Therefore, Foster does not disclose or suggest that a signal that does not need to be processed by the protocol stack is sent to the client module indicating that the allocated buffer has been filled in order to allow the client module to process the at least a portion of the requested data.

Nevertheless, even if Foster did suggest such mapping and processing of the requested data, Foster makes no mention of processing requested data instructions through a controller schedule. As such, Foster cannot possibly disclose or suggest that upon receiving the at least a portion of the requested data into the allocated buffer, the data request instructions are deactivated in the host controller schedule such that the deactivated data request instructions do not need to be removed from the host controller schedule, as recited, inter alia, in claim 1.

Noting some of the deficiencies of Foster, the Office action cites Hoskins. Hoskins discloses a command queue processor. Hoskins provides for various queues for transferring command nodes in order to identify and prevent collisions of such. Although Hoskins discloses transferring command nodes between queues for "recycling" purposes (see e.g., col. 13, l. 64 through col. 14, l. 11), such transferring of command nodes is not the same as Applicants' claimed deactivation of data request instructions in the host controller schedule upon receiving at least a portion of the requested data. More specifically, Hoskins is silent to any type of transfer based upon receiving requested data. In fact, Hoskins simply transfers such command nodes if no collision of command nodes exists between the transferred queues. In addition, Hoskins transfers the command nodes in and out of an active queue, which is precisely what Applicants' claimed invention attempts to avoid—as noted in the claim, which recites that the deactivated data request instructions do not need to be removed from the host controller schedule. Accordingly, the transferring of command nodes between queues as disclosed in Hoskins, actually "teaches away" from Applicants' claimed invention.

In addition, *Hoskins* like *Foster* is silent with regards to a protocol that typically processes requests for data through a protocol stack. As such, *Hoskins* cannot rectify those deficiencies of *Foster* noted above with regards to Applicants' additional limitation that: a data transfer request is mapped to the allocated buffer in order to allow requested data to be directly transferred from a peripheral device to the buffer, without processing the requested data through the protocol stack; and a signal that does not need to be processed by the protocol stack is sent to the client module indicating that the allocated buffer has been filled in order to allow the client module to process the at least a portion of the requested data.

Noting some of the deficiencies of both *Foster* and *Hoskins*, the Office action cites *Perry*. *Perry* discloses streaming information appliance with buffer read/write synchronization. As noted above, the Office action relies on *Perry* as allegedly disclosing various features within some of the dependent claims. Accordingly, Applicants respectfully submit that *Perry* cannot possibly rectify those deficiencies noted above with regard to *Foster* and *Hoskins*.

For at least those reasons stated above, Applicants respectfully submit that the combination of *Foster*, *Hoskins*, and *Perry*—taken either individually or as a whole—does not render independent claim 1 unpatentable. In fact, as noted in the interview summary, the Examiner generally agreed that the above features recited in claim 1 distinguish the claimed invention from the prior art of record.

Claim 14 recites a method for reducing the overhead that can otherwise be associated with transferring data packets through a protocol stack with similar elements as those stated above with regards to claim 1. In addition, claim 14 recites locking the allocated buffer to the data transfer request in such a way that prevents a host controller from allocating the buffer for another purpose until completed processing of the requested data for the data transfer request. Because the cited art of record does not render claim 1 unpatentable, and because this art is also silent with regard to locking allocated buffer to a data transfer request, Applicants respectfully submit that claim 14 is also patentably distinguishable from the combination of *Foster*, *Hoskins*, and *Perry*.

Applicants respectfully note that independent claims 16 and 27 recite computer program products with elements similar to those noted above with regard to claims 1 and 14. As such, Applicants respectfully submit that claims 16 and 27 are patentably distinguishable over the cited

art of record for at least those reasons stated above with regard to claims 1 and 14; and therefore, Applicants respectfully request withdrawal of these grounds of rejection.

Based on at least the foregoing reasons, Applicants respectfully submit that the cited prior art fails to anticipate or make obvious Applicants' invention, as claimed for example, in independent claims 1, 14, 16, and 27. Applicants note for the record that the remarks above render the remaining rejections of record for the independent and dependent claims moot, and thus addressing individual rejections or assertion with respect to the teachings of the cited art is unnecessary at the present time, but may be undertaken in the future if necessary or desirable, and Applicants reserve the right to do so.

All objections and rejections having been addressed, Applicants respectfully submit that the present application is in condition for allowance, and notice to this effect is earnestly solicited. Should any question arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that he be contacted at +1.801.533.9800.

Dated this 5th day of August, 2006.

Respectfully submitted,

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